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MATERNAL AND CHILD HEALTH IN THE DEVELOPING COUNTRIES

As their experience accumulates, international public health agencies are becoming increasingly preoccupied with stock-taking and evaluation. An attempt to assess the work of WHO and UNICEF in a specific field was recently made by Dr Jessie M. Bierman, Professor of Maternal and Child Health, University of California School of Public Health, and former Chief of the Maternal and Child Health Section at WHO Headquarters, in a paper presented to the American Public Health Association in November 1957. The following article, which is an adaptation of Dr Bierman's paper, describes the principal methods used by WHO and UNICEF to assist governments in improving their maternal and child health services. It appears by kind permission of the American Journal of Public Health, *which published Dr Bierman's original paper in July 1958.*[1]

Training of personnel

From the beginning both WHO and UNICEF have placed a high priority on assistance in the training of personnel. From 1947 to 1956, WHO awarded 601 fellowships for study abroad of various aspects of maternal and child health, covering public health training with major emphasis on maternal and child health, courses in child health and puericulture, paediatrics and obstetrics, and periods of observation of various maternal and child health services. In 1956, fellowships in this branch were awarded to 71 physicians and 21 nurses who came from 44 countries or territories and studied in 27 countries.

To help countries to establish and improve their training facilities, WHO assigns international personnel to work with the governments, and UNICEF provides the needed equipment, supplies, and transportation to the training institutions, with stipends for certain categories of personnel.

WHO gives three main types of "within-country" assistance in maternal and child health. First of all, some 40 demonstration and training projects have been established in 29 countries; for each of these, WHO has provided a team consisting of a medical officer and one or more public health nurses and midwives. These teams help to organize demonstration units which give orientation and refresher courses to professional maternal and child health personnel, as well as training auxiliary health workers. In a second type of training project, experienced nursing and midwifery tutors have been provided to help 34 countries to establish new training institutions or to improve existing ones. Thirdly, assistance in developing the teaching of paediatrics has been given to medical schools in 11 countries. In all three types of project, the country provides counterpart personnel who work with the international staff and carry on when the latter are withdrawn. Short-term consultant services in various aspects of maternal and child health are also made available by WHO. In 1956, maternal and child health and such related activities as nursing, midwifery, and nutrition services accounted for roughly a quarter of WHO funds expended in the assisted countries.

Large numbers of auxiliary personnel, such as assistant midwives, nurses and sanitarians, have been given short periods of simple training so as to hasten the provision of minimum maternal and child health services. As a result, thousands of new maternal and child health centres have been established, especially in rural areas. UNICEF has provided equipment, dried milk, vitamin

[1] Bierman, Jessie M. (1958) *Amer. J. publ. Hlth.*, 48, 888

supplements and drugs for the centres, as well as transportation for supervisory personnel, and kits for nurses and midwives. From 1953 to 1957, more than 40 countries were helped by UNICEF in this way.

Despite the fact that many thousands of health workers have been trained and are helping millions of mothers and children in newly established health centres and in their homes, only a small proportion of the population in many countries benefits even from minimum maternal and child health services. Moreover, services everywhere need to be improved and extended. This can be done only in so far as the numbers of adequately trained professional workers increase and the governments are able to establish and maintain posts for supervisors, consultants, instructors and programme directors. It must be remembered that internationally assisted health projects constitute only a very small part of the total effort being made by the governments, which are striving to bring about improvements in many fields.

Improved leadership

The growing interest of the assisted governments is demonstrated by the number of maternal and child health units they are setting up in their national health administrations. Of the 53 countries which have had assistance from WHO in this field, 28 have now established such units or intend to do so shortly. Twelve of them were established between 1953 and 1957. The greatest progress in this respect has been in South-East Asia.

Although all these units are as yet inadequately staffed, it is encouraging to note that, in each region, there is at least one physician at the top planning level whose principal responsibility is maternal and child health. WHO has now made provision for nine permanent posts for maternal and child health advisers at this level: two at headquarters, two in the South-East Asia Region, and one in each of the remaining regions. Six of the seven advisers so far appointed have had wide experience in international health work and most have served in more than one region. Furthermore, the maternal and child health assistance projects in the various countries are increasingly benefiting from the services of international personnel who have had previous experience in developing countries and from the work of trained national staff.

Some requirements for progress in the future

Improved leadership in the assisted countries and the building up of a cadre of seasoned staff in WHO and UNICEF are essential for progress in the future, which will be measured not only in terms of numbers of personnel trained and of services established, but in terms of the results achieved in reducing the major health problems of mothers and children in the assisted countries. This means that the somewhat empirical approaches of the past must be replaced by more precise methods. It will be necessary to devote more study to the nature and extent of maternal and child health problems and possible resources for dealing with them. Comprehensive data on mortality and morbidity and on the prevailing endemic diseases affecting mothers and children will have to be obtained for each area. More specific information on growth and development patterns of children, feeding practices, beliefs and traditions concerning child-bearing and child-rearing—all are needed to provide a better basis for sound programme planning and to give the necessary base-line information for the evaluation of future progress.

Observation of present practices in many areas has revealed the need for reorienting existing service and training programmes and for developing new approaches better suited to the needs and resources of the assisted countries. Too much effort has been expended in setting up prefabricated programmes which are ill suited to the situation. This reflects both the inexperience of international personnel in dealing with the problems of developing countries and the inadequacy of much of the training received by national staff at home and abroad. Only the scientific principles of public health practice in the more developed countries are universally applicable, not the programme patterns.

Both international and national personnel in positions of leadership need a thorough knowledge of epidemiological methods as applied to maternal and child health work, and an efficient approach to programme planning. They also need to understand the influence of socio-economic and cultural factors on the patterns of health and disease and on measures for health improvement. To realize the vast differences that exist in levels of socio-economic development, one need only compare infant mortality rates in the developing countries with past rates in the more developed countries. Sweden has the longest series of data on vital statistics, going back to 1750 [2] when her infant mortality rate (i.e., the number of deaths in the first year of life per 1000 live births) was in the neighbourhood of 200. Similar or even higher rates still prevail in a number of countries in Africa and the Eastern Mediterranean Region. Between 1810 and 1875, Sweden's rate fluctuated around 150 —the present-day rate in much of Asia. By 1900 the Swedish rate was around 100, the figure currently reported by a number of countries in Central and South America.

The poor economic and social situations and the resulting health problems in many countries today are probably similar to those which prevailed in the past in the more developed countries. D. B. Jeliffe [3] has pointed out that, while the importance of the exotic tropical diseases should not be minimized, present-day health problems in the developing countries are due more to the persistence of such non-exotic factors as inadequacy or absence of excreta disposal, squalid, overcrowded housing, and inadequate, contaminated water-supplies, all of which lead to an endless succession of parasitic and infectious diseases. To these must be added the pervasive effects of undernourishment and malnutrition and the tenacious influence of cultural factors on the whole pattern of living.

[2] United Nations (1954) *Foetal, infant and early childhood mortality*, New York (*United Nations Population Studies*, No. 13), vol. 1, p. 29

[3] Jeliffe, D. B. (1957) *Bull. Tulane Univ. med. Fac.*, **16**, 55

Programmes must be broad in scope

In areas with high prevalences of malnutrition and of endemic and epidemic disease, maternal and child health programmes must be broad in scope and prepared to deal with the general health needs of mothers and children, as well as with the special needs relating to the reproductive and growth processes. Children under the age of 15 and women of child-bearing age constitute over 60% of the population in developing countries. Because of their natural appeal, services for mothers and children are usually among the first permanent health services to be established. They offer a particularly effective starting point for preventive services and individual health education, and form a nucleus around which family health services, sanitation and disease control programmes can be developed. Much attention is being devoted to integrating existing maternal and child health services into general health programmes, particularly in Asia, and to incorporating maternal and child health in newly developing health programmes, as in Latin America.

Use of resources in maternity care

In most developing countries, puerperal sepsis and haemorrhage are the principal causes of maternal death. Sepsis results from the unskilled ministrations of the traditional birth attendants who deliver most babies. Haemorrhage is related to the almost universal prevalence of anaemia among women of child-bearing age. The nature and etiology of the anaemias require more study, but from available evidence it seems likely that a major cause is a shortage of iron and proteins in the diet,[4, 5] while intestinal parasites also play a role. Furthermore, many of the women suffer from various endemic and epidemic diseases common to the community. In such circumstances, it appears that the best use of the resources would be:

[4] Eastman, N. J. (1954) *The teaching of obstetrics and gynecology as preventive medicine.* In: *International Congress of Gynecology and Obstetrics*, Geneva

[5] Woodruff, A. W. (1955) *Brit. med. J.*, **1**, 1297

1. To establish a simple training course for the traditional birth attendants, in which they would be taught how to avoid introducing infection into the birth canal and the cord area of the newborn, to bring their patients to the health centre for pre-natal care, to recognize serious complications and to refer them for treatment. A course of this kind helps the attendants to feel that they are members of the health centre team and makes them willing to accept supervision. UNICEF has been assisting such efforts by providing training stipends for the attendants and delivery kits for those who complete the training course and are found to be reliable.

2. To concentrate, in the pre-natal clinics, on the vigorous treatment of anaemia, on nutrition, and on health education. Because of the high prevalence of anaemia and undernourishment, iron therapy and supplemental feeding will be offered routinely to all patients, thus saving the time which would be required to perform haemoglobin estimations. Anthelminthic therapy will also be given according to a prescribed routine because ascariasis is prevalent. Physical signs and the history of previous pregnancies will help the workers to decide if other measures are needed. Nutrition education with emphasis on iron- and protein-containing local foods should be carried out in the centres and the women's homes. These are important, not only for improving the mother's health and that of the foetus, but in helping to ensure successful lactation upon which the baby will have to depend for some months after birth.

In the circumstances outlined, the other usual routines of pre-natal and maternity care are of secondary importance. Where the needs are so great and the resources so limited as they are in the developing countries, it is distressing to find the midwife devoting most of her time to routine attendance at confinements and the remainder to routine pre-natal procedures focused on the pregnancy rather than the patient, while the use of UNICEF iron tablets and other dietary supplements and drugs is neglected. This situation reflects the inadequacy of traditional training in midwifery. The training of all categories of maternal and child health personnel needs to be reviewed in the light of requirements in the field, the recruits available, the types of personnel needed, and their utilization on the job.

Services for infants and young children

In nearly all assisted countries, services for children have received less attention than those for mothers. In fact, the interest of the staff and the availability of services tend to decrease as children grow older, so that the child of pre-school age is to a great extent neglected. This is particularly unfortunate since, in the countries concerned, the major preventable health problems—undernourishment, malnutrition, intestinal infections, and communicable diseases—begin during the weaning period and continue to be prevalent through the second and third years of life.

In countries reporting infant mortality rates of about 100 or higher, the ratios of neonatal mortality (deaths under one month of age) to post-neonatal mortality (deaths between 1 month and 1 year of age) are generally about 1:2, rising to as much as 1:4 in those with the highest infant mortality rates. In countries where rates have fallen well below 100 the ratios are in the order of 1:1, and only where the rates have reached 35 or below do the neonatal mortality rates exceed the post-neonatal rates. In the circumstances, there seems to be little justification for concentrating services on the neonate at the expense of the older infant and young child.

L. J. Verhoestraete has pointed out the sharp contrasts in mortality rates between the developed and less developed countries; these are particularly great in the case of children 1-6 years of age.[6] Some countries report about as many early childhood deaths as infant deaths.

While there are no figures on morbidity, it is interesting to speculate on the amount of illness there must be among infants and children in the less developed countries. In an unpublished memorandum K. Sinclair-Loutit has calculated, for different case-

[6] Verhoestraete, L. J. (1956) *Amer. J. publ. Hlth*, 46, 19

fatality rates, how many cases of illness must occur among infants in countries with high infant mortality rates. In a country with an infant mortality rate of 100 there would be, among 1000 infants, up to 27 new cases of minor illness (case-fatality rate of 1%) daily, or 10 000 cases a year. For diseases with a case-fatality rate of 10%, there would be up to 1000 cases a year. In countries where the infant mortality rates are 200 or 300 these figures would, of course, be doubled or trebled.

The amount of illness among young children is likewise staggering. Severe malnutrition reaches its peak prevalence during the early childhood years. About 85% of diagnosed cases of protein malnutrition occur in children 1-3 years of age.[7] The dangers from other nutritional disorders, and from enteric infections and intestinal parasites, are also greater in early childhood than during the first year of life when the infant receives milk in his diet and enjoys a greater degree of protection from an environment full of hazards. The nutritional and enteric diseases responsible for the major share of deaths among young children are all preventable through improved nutrition, sanitation of the environment, and the education of mothers in child care. In these circumstances, " well-child " services and those limited to infants have little meaning. What is needed are programmes combining therapeutic and preventive care, focused on the common endemic diseases and continuing throughout infancy and early childhood.

Training in paediatrics and nutrition

In developing countries the training of all health workers—from physicians to auxiliaries—has been particularly weak in paediatrics and nutrition. Recognizing this fact, both WHO and UNICEF have taken steps to call attention to the importance of paediatric training and to provide more assistance in this field. Two surveys of paediatric education assisted by WHO have recently been completed in Latin America and in western Europe.[8] A WHO Study Group on Paediatric Education was convened in 1956 to consider ways of improving the teaching of paediatrics with special emphasis on the developing countries.[9] The UNICEF Executive Board has decided to extend its assistance to medical schools so as to enable them to expand and improve training programmes in paediatrics and preventive medicine. In the plans being developed jointly by UNICEF and WHO, the newly established or enlarged paediatric departments will serve as focal points for research in child health and for the teaching of paediatrics to nurses and midwives, as well as to physicians. They will provide refresher courses for maternal and child health personnel, as well as postgraduate training for teachers and supervisors of field programmes.

Consideration is being given by WHO, in co-operation with UNICEF and the Nutrition Division of FAO, to various means for increasing the effectiveness of nutrition education in maternal and child health centres and including nutrition courses in the training of all health workers.

The problem of enteric diseases among children has been the subject of epidemiological studies and regional conferences in Latin America.[10] Similar activities are planned for other areas. Field investigations are now being carried out to determine whether health workers with minimal training and facilities can be successfully taught the techniques of oral rehydration. If they can, the lives of many infants and young children suffering from severe enteric infections could be saved.

Services for children of school age

Although there is as yet very limited provision of health services for children of school age in the developing countries, interest in this field is growing. In this as in other aspects of maternal and child health it is impossible to envisage comprehensive programmes for some time to come. Unfortunately, the beginnings have often consisted of attempts to provide medical inspec-

[7] Unpublished working document WHO/MCH/64, p. 42
[8] See *Chron. Wld. Hlth Org.*, 1958, 12, 195, 338.
[9] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 119
[10] See *Chron. Wld Hlth Org.*, 1958, 12, 193.

tions before there have been any real possibilities for follow-up and corrective care. In these circumstances the inspections become perfunctory routines of little real value.

A more realistic approach now being stressed takes advantage of the unequalled opportunities which schools offer for health education. By enabling children to experience living in a healthy environment and by giving practical health teaching with emphasis on sanitation, nutrition, and the transmission of disease, schools can correct the false ideas about health that are passed on from one generation to the next.

The starting points are teacher education in health, and the provision of sanitary latrines and safe water-supplies in schools and teacher-training institutions. Ways for improving the health education of teachers are currently being studied by WHO in collaboration with UNESCO. It is hoped that UNICEF assistance may be available to help communities provide safe water-supplies and excreta-disposal facilities in their schools. The installation, maintenance, and proper use of these facilities and their relationship to health can provide a good basis for practical instruction. Likewise, the distribution of UNICEF dried milk to schools offers an excellent practical starting point for nutrition education.

* * *

These are but a few of the ways in which the governments, WHO and UNICEF are working together to improve the health of mothers and children in the developing countries. There can be no doubt that, while much remains to be accomplished in this field, a substantial beginning has been made.

MALARIA SYMPOSIUM IN BANGKOK

A Malaria Symposium, organized by WHO, was held in Bangkok on the invitation of the Government of Thailand, from 13 to 20 December 1957. It was attended by anti-malaria workers from Afghanistan, Burma, Cambodia, Ceylon, India, Indonesia, Iran, Israel, Laos, Federation of Malaya, Nepal, North Borneo, Territory of Papua and New Guinea, the Philippines, Sarawak, Taiwan (China), Thailand, Viet Nam, and West New Guinea. Observers were present from United States International Co-operation Administration missions in several of these countries and territories, and from UNICEF. WHO was represented by the Chief of the Malaria Section at Headquarters, the Malaria Advisers for the South-East Asia and Western Pacific Regions, and field staff from various countries in these Regions. Dr. A. Gabaldón from the Malaria Division of the Venezuelan Ministry of Health was invited by WHO to attend as a consultant.

The subjects of discussion included: surveillance techniques in malaria eradication programmes; the problem of residual foci of transmission; chemotherapy in malaria eradication; susceptibility and resistance of vector species to insecticides; spraying; and the planning and inter-country co-ordination of eradication programmes. The conclusions of the Symposium on these subjects are summarized below.

Surveillance

In its sixth report, the WHO Expert Committee on Malaria defined surveillance as being " mainly concerned with the search for residual or imported cases of malaria while eradication programmes are in progress or after they have been discontinued, together with the measures to be taken after any such foci have been detected ".[1] This definition was borne in mind by the participants in the Symposium during their discussions.

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 123, 54

Surveillance can most usefully be started when transmission of malaria has been almost completely interrupted, i.e., in the year following the reduction of (*a*) spleen rates (in children aged 2 to 9) to below 10‰, (*b*) parasite rates (in children aged 2 to 9) to below 2‰, and (*c*) parasite rates in infants to nil.

If surveillance and spraying combined result in a further decline of the spleen and parasite rates in children, if infant parasite rates continue to be nil and if the surveillance data reveal a negligible incidence of autochthonous transmission of malaria, spraying should be discontinued and surveillance continued for a further period of two or three years.

The continuance of surveillance after the withdrawal of spraying serves three purposes: (i) the prompt detection of fever cases, which can then be treated before they generate secondary cases; (ii) the confirmation of eradication through the intensive investigation of malaria morbidity; and (iii) the detection of residual foci of infection which might necessitate further eradication measures.

According to the sixth report of the WHO Expert Committee on Malaria, malaria eradication " may . . . be assumed when an adequate surveillance system has not discovered any evidence of transmission or residual endemicity despite careful search for three consecutive years, in the last two of which, at least, no specific general measures of anopheline control have been practiced ".[2]

Procedures

The following surveillance procedures were recommended by the Symposium:

1. " Active " search for cases, involving regular visits to each house in the area of eradication.

2. " Passive " search for cases (notification by patients, medical practitioners or other agencies).

3. Treatment of detected cases. The general practice is to treat all fever cases, without awaiting microscopic diagnosis, with 4-aminoquinolines (chloroquine or amodiaquine) in a single dose. In some countries pyrimethamine is also administered, and in others 8-aminoquinolines are given in microscopically diagnosed cases (5-day treatment in *falciparum* malaria, and 14-day treatment in *vivax* and *malariae* malaria).

4. Epidemiological investigation of proved malaria cases to determine if they are: (*a*) imported, (*b*) sporadic (relapses due to infections acquired in previous years), (*c*) induced (as a result of blood transfusion or other parenteral inoculation of plasmodia), (*d*) introduced (spread locally by imported reservoirs of infection), or (*e*) indigenous (spread locally by casual reservoirs of any category).

5. Adoption of measures, including the resumption of spraying, to deal with indigenous malaria cases discovered during the surveillance period.

Organization

It is essential for the surveillance procedures to cover the whole population of the eradication area, so that all residual reservoirs of infection may be detected. When transmission is largely interrupted, infant parasite rates may be nil even in the presence of low-grade autochthonous transmission, and house-to-house visits are the only means of detecting positive cases and ensuring their treatment.

In areas with well-developed rural health services, the staff of these services may be used for surveillance, but should be supplemented by staff specially trained for the purpose. In general, there should be one inspector to every 10 000 inhabitants in the eradication area. The frequency of visits will depend on the local epidemiology of the disease.

When the consolidation phase of the eradication campaign is finished—i.e., two to three years after withdrawal of spraying—surveillance may be left entirely to the regular local health staff. In areas where health services are under-developed, the malaria surveillance personnel may well form the nucleus of a rural health service.

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 123, 18

Special studies

As surveillance is a relatively new concept and its procedures are often empirical, special studies should be undertaken on the nature and pattern of surveillance procedures. The following subjects of study were suggested at the Symposium: the most feasible procedures for detecting all reservoirs of infection; the maximum period up to which parasitaemia may be allowed to continue before radical treatment is given; and how frequently visits should be made in order to ensure that reservoirs of infection are detected and treated before they can do much harm.

Residual foci of transmission

The Symposium defined a focus of transmission as "a circumscribed area where malaria cases occur as a result of the contact of gametocyte carriers with vector mosquitos, such circumscribed areas being a part of a considerably larger area or country in which malaria transmission has been or had been deemed to have been completely interrupted or has been unknown to occur previously".

In the later stages of an eradication programme, residual foci of transmission present a serious threat to its success. There are two ways of dealing with the problem: (*a*) clearance of detected foci, and (*b*) prevention of foci.

Clearance of detected foci

The first step is to apply insecticides immediately in order to stop transmission; the next is to treat infected individuals with antimalarial drugs. In one country, it is the practice to trace and treat all cases as quickly as possible, repeating treatment twice at weekly intervals and once more a fortnight later. The focus is then kept under observation for a year; it is visited every month and submitted to routine spraying at intervals of three months. Amodiaquine (or chloroquine) and primaquine are used for treatment, the dosage varying with individual foci. If the focus is small, treatment is given only after blood smear examinations. If brisk transmission is taking place, all fever cases are treated immediately and blood smears are taken at the same time. If the focus is primarily one of *P. falciparum*, all fever cases are given five single doses of primaquine daily for three days in addition to the daily doses of amodiaquine or chloroquine. In all other cases, a 14-day course of primaquine is given in addition to the amodiaquine or chloroquine.

Prevention of foci

The occurrence of foci of transmission when spraying is interrupted after an adequate period of total coverage indicates the continuing presence of a certain number of gametocyte carriers in contact with vector mosquitos. Notwithstanding the practical difficulties involved, an extensive attack on the parasite as well as the vector from the outset of the eradication programme is the best way of ensuring that no residual foci will occur in the later stages. For this purpose, existing personnel for the treatment of cases, supervisors of spraying squads, and other available field staff might be trained to administer radical cure.

Chemotherapy in malaria eradication

Chemotherapy has its place in the normal course of any malaria eradication campaign, but is especially useful when insecticide spraying is ineffective owing to the behaviour or reaction of the vector, to the condition of the local housing, or to the fact that the population is nomadic or semi-nomadic and does not live in regular fixed dwellings.

Gametocytocidal drugs should be used during the concluding stages of eradication, especially in areas of refractory malaria where the application of residual insecticides has has not been entirely sufficient to stop transmission.

Mass drug treatment procedures vary from country to country, the chief problem being to obtain the co-operation of the population under treatment. A point raised at the Symposium was that antimalaria personnel should observe patients as they take the drugs; in one place it was found that only about 5% of the tablets distributed were actually taken when this precaution was neglected.

The use of medicated salt is being considered by at least four countries in the South-East Asia and Western Pacific Regions where the conventional means of eradication may prove inadequate owing to the migratory nature of the population and the relative inaccessibility of certain populated areas.

Insecticide susceptibility and resistance

The Symposium briefly reviewed the various types of resistance of vector species to insecticides with special reference to physiological and behaviouristic resistance. The possibility of combating resistance by changing the insecticide or increasing the dosage was discussed. It was noted that, in Java, an increase in the dose of insecticide had proved ineffective against DDT-resistant *A. sundaicus*, while the substitution of dieldrin for DDT had given good results. Eradication campaigns should, however, aim at stopping the transmission of malaria before resistance becomes a problem.

It is important to test vector species before spraying begins, in order to determine their natural level of susceptibility (LC_{50}) to the insecticide used. This will permit the measurement of changes in susceptibility during spraying.

Spraying

The participants in the Symposium agreed that the aim of residual insecticide spraying is to achieve, for a certain period, complete interruption of transmission. Adequate surveillance measures will then ensure the continued absence of autochthonous transmission.

Spraying should not be confined merely to villages where spleen rates are above a certain level, or to vector resting places as determined by routine entomological studies, but should cover all areas exposed to the risk of malaria.

Dosage and formulation

The choice of insecticide, the dosage and the frequency of spraying are all governed by local conditions such as the duration of transmission, the susceptibility of the vectors, the nature of the surfaces to be sprayed, local availability of materials, and relative costs. The formulations used should conform to the standard specifications recommended by WHO.

Co-operation of the public

In most countries in the South-East Asia and Western Pacific Regions, the attitude of the public to house-to-house spraying is at first sceptical, if not resentful. A phase of enthusiastic co-operation follows, perhaps because of the effect of the insecticide on ants, spiders, cockroaches, bugs and other domestic pests. Three or four years later, when this effect is less marked and malaria is no longer a common ailment, apathy develops, followed by active opposition to house-spraying and reluctance on the part of administrators to allot further sums for the attack on malaria.

Opposition to spraying is mainly due to ignorance, and the remedy is health education. The public should be told the basic facts about malaria control, and kept constantly informed of the progress and results of the eradication programme. It should be made clear from the outset that the effect of the insecticide on domestic insect pests is only temporary and that the primary purpose of the spraying is to prevent the transmission of malaria.

Planning an eradication programme

Malaria eradication is an urgent measure outside the usual routine of the national health department and, although it should be considered as part of a country's general health programme, its integration into the general health organization should be deferred until an adequate period of surveillance has shown that there is no danger of a recurrence of autochthonous transmission.

The technical and operational direction of an eradication programme should be in the hands of a technically competent central organization vested with adequate supervisory authority. Among the countries represented at the Symposium, central antimalaria organizations already exist in all

those with country-wide programmes, namely, Afghanistan, Burma, Cambodia, India, Iran, Israel, the Philippines, Taiwan (China) and Thailand.

Legislation

Legislation may have to be enacted to give antimalaria workers right of entry into houses for survey, spraying and assessment purposes, and in connexion with the compulsory notification of the disease. It may also be needed to give the national malaria service greater scope in matters of recruitment, to ensure adequate financial support for the whole period of the programme, and to give the director of the eradication service full control of the funds allotted to the programme.

Preliminary surveys

The eradication programme should be preceded by preliminary surveys or by pilot operations in limited areas. The first purpose of a preliminary survey is to delimit the malarious areas of the country; as eradication rather than control is the object, these should include all areas where any degree of transmission occurs. The second purpose is to establish: the season or seasons of transmission; the nature and distribution, both topographical and seasonal, of the vector or vectors; and information on vector habits (e.g., resting, reaction to different insecticides).

Attack phase

This phase of the programme should not only be carefully planned beforehand, but should be continually reassessed while it is in progress. If there is clear evidence that the transmission of malaria is being completely interrupted, all is well, but if interruption is not complete, the reason must be found and the necessary measures taken. If epidemiological and entomological studies could be continued side by side with the eradication measures, time might be saved and difficulties averted.

It is essential, during the attack phase, to ensure that the measures decided upon are carried out as completely and efficiently as possible, and in particular that the insecticide is applied in the right dose, by the right method and at the right time.

Inter-country co-ordination of programmes

The necessity of co-ordinating all phases of malaria eradication operations in neighbouring countries was generally accepted by the participants in the Symposium. In the preparatory phase, exchange of information on the results of preliminary entomological and parasitological surveys is of the utmost importance. Other information which should be exchanged in this phase includes: results of delimitations of malarious and non-malarious areas; data about areas of difficult access (which tend to become residual foci, especially when they are situated along frontiers); usual movements of nomads, etc.

In the phases of consolidation and maintenance, information should be exchanged on such subjects as residual foci of transmission, reappearance of malaria vectors thought to be eradicated, etc. Measures to prevent the introduction or re-introduction of malaria vectors by ship or aircraft are also indicated in these phases.

The principle that malaria eradication can be obtained only by the joint and co-ordinated efforts of all governments and agencies concerned has found practical application in the South-East Asia Region where an Antimalaria Co-ordination Board has been established for Burma, Cambodia, Laos, Thailand and Viet Nam.

BAGHDAD MEETING ON MALARIA ERADICATION

For the countries of the Eastern Mediterranean Region, malaria is still the greatest public health problem. Out of a total population of 190 million people, 140 million live in malarious areas, and only 33 million are covered by present control and eradication operations. So far, four countries—Iran, Iraq, Lebanon and Syria—have adopted plans for the eradication of malaria, but eradication programmes are in preparation in several other countries.

With the object of co-ordinating these programmes and providing an opportunity for the discussion of common problems, a Technical Meeting on Malaria Eradication was organized by the WHO Regional Office for the Eastern Mediterranean from 7 to 12 December 1957. The meeting took place in Baghdad, Iraq, and was attended by delegates from Cyprus, Egypt, Iran, Iraq, Jordan, Lebanon, Saudi Arabia, Somalia and Syria, as well as by WHO staff from several of these countries, from the Regional Office, and from headquarters. Observers were also present from UNICEF, UNRWA, the United States International Co-operation Administration, and the Rockefeller Foundation.

The meeting heard reports on the progress that had been made in the various participating countries in implementing malaria eradication programmes. It was noted that certain administrative and financial difficulties had been encountered, and to overcome these the meeting made the following recommendations:

1. Every country should set up a central malaria service, responsible for planning the campaign, engaging the staff, directing and supervising the operations, and co-ordinating all activities in the field of malaria throughout the country.

2. Governments should approve a special budget for malaria eradication, distinct from funds allocated for other communicable disease control, and guaranteed for a period of at least five years.

3. The Director of the Malaria Eradication Service should have control of the allocated budget and authority to take all administrative measures necessary for the implementation of the programme. It was suggested that he should be assisted in these functions by a Malaria Eradication Board.

4. The remuneration of personnel should be increased by the award of a special "malaria eradication allowance", and the status and tenure of employment of key personnel should be improved.

5. Personnel engaged in eradication operations should have legal right of entry into private houses.

6. Legislation should be passed to make the notification of malaria cases obligatory and to require that all cases should receive proper treatment.

7. Insecticides and antimalarial drugs should be exempt from customs duty.

It was pointed out that the success of an eradication programme in one country can be jeopardized by lack of similar measures in neighbouring countries, with consequent risk of reinfection. Malaria eradication schemes should therefore be co-ordinated with adjoining countries through the WHO advisory staff or by direct contact. Bilateral agreements should be encouraged, and it was suggested that countries might arrange an interchange of teams to deal with frontier areas, such operations being co-ordinated through a boundary commission.

The meeting stressed the importance of proper training of personnel at all levels and discussed a number of aspects of this question.

Before a plan of operations is drawn up, a thorough survey of the area must be made

and data collected on the climate, topography, communications, and the living conditions and way of life of the population. Special malariometric and entomological surveys are also necessary.

A number of technical problems were discussed at length. Resistance has already been encountered in *Anopheles stephensi*, one of the important local vectors, in Saudi Arabia, Iraq and Iran.[1] This resistance appears to be specific for DDT, and the meeting endorsed the use of dieldrin in these areas. It was recommended that regular assessments of susceptibility should be made at different times of the year before any spraying operation starts, to provide a base-line for the comparison of susceptibility within a particular area. Such tests will also serve to determine which insecticide should be used and in what dosage.

Although residual spraying with adulticides is the method of choice, the use of larvicides was recommended in certain areas, for example where the breeding places are widely scattered and effective adulticiding is rendered impossible owing to vector behaviour and unusual topographical factors. This applies to the case of *A. sergenti* in Jordan.

Another problem is that of sorption of insecticides on wall surfaces.[2] Studies on the sorptive properties of mud walls in southern Iran have revealed a rapid loss of the insecticides sprayed. The problem has not yet been fully studied in other areas.

In many parts of the Eastern Mediterranean, millions of people live a nomadic life, and in the course of their wanderings often cross national frontiers. There is thus a potential danger that they may carry infection from one country to another. The distribution of antimalarial drugs is in many cases the best means of dealing with this problem, but spraying of tents should also be carried out where this is practicable. In Iran, spraying of tents with DDT in kerosene has been found to remain effective for about 40 days, which is considered adequate for the protection of tribes when crossing infected areas.

The meeting expressed great satisfaction at the steps taken to control malaria among pilgrims at Mecca and Jeddah, and welcomed the idea that similar control measures should be extended to Medina and other stations situated on the pilgrims' routes. There was a general wish that WHO should continue the study of the best methods of keeping aeroplanes, ships and vehicles free from insects.

[1] See *Chron. Wld Hlth Org.*, 1958, 12, 94.

[2] See *Chron. Wld Hlth Org.*, 1957, 11, 371.

Hebrew translation of WHO monograph

An abridged version of the monograph *Maternal Care and Mental Health* by Dr. J. Bowlby (*World Health Organization: Monograph Series*, No. 2) was published in Hebrew last year by the Sold Institute for Child Welfare, Jerusalem. This monograph was originally issued by WHO, in English and French, in 1951; a Spanish version was subsequently published by the Pan American Sanitary Organization. It has also appeared in Danish, Finnish, Serbo-Croat and Swedish translations.

TRACHOMA CONTROL IN TAIWAN

The trachoma control programme in Taiwan (China) dates back to 1952, when the Government—with assistance from WHO and UNICEF—investigated the prevalence of trachoma on the island and the best means of large-scale treatment. A mass campaign was subsequently launched for the control of the disease among Taiwan schoolchildren. The article that follows [1] gives details on the organization and development of the programme, the methods employed and plans for the future.

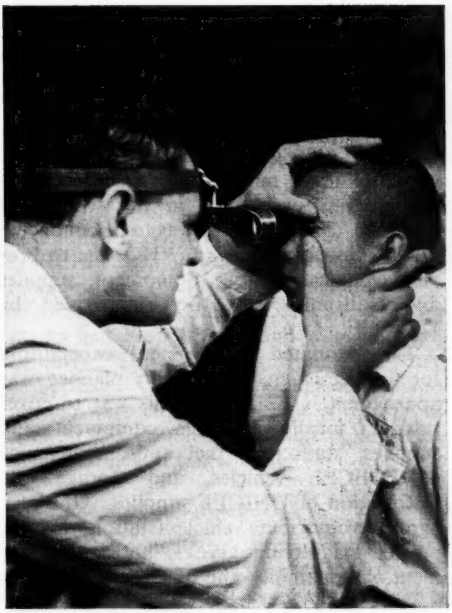
Preliminary investigation

In 1951, 31% of all patients attending the ophthalmic department of the National Taiwan University Hospital at Taipeh in northern Taiwan suffered from trachoma; at Kaohsiung Provincial Hospital in the south of the island, 80% of patients with ophthalmic troubles were affected by the disease. At that date the methods commonly used to treat trachoma in Taiwan were the expression of follicles, scarification, the application of copper sulfate or silver nitrate, and actual cautery. Treatment with sulfonamides and antibiotics had not yet been used systematically or on a large scale.

A WHO consultant—Dr Vincent Tabone—visited Taiwan in September 1952 to examine the situation. On his recommendation and with assistance from WHO and UNICEF, the Government conducted an investigation into the prevalence of trachoma among schoolchildren and their family contacts, and the possibility of large-scale treatment by modern methods.

The investigation was undertaken by the Taiwan Trachoma Control Centre and carried out by three teams, each consisting of an ophthalmologist and a nurse. The classification of trachoma applied was that recommended in the first report of the WHO Expert Committee on Trachoma.[2]

Pupils in six selected schools in the Taipeh area were examined. Out of a total of 7021, 3281 (46.7%) had trachoma, and 1955 (27.8%) had conjunctivitis (including doubtful trachoma). These cases were treated with 1% antibiotic (Aureomycin or Terramycin) ointment twice or four times a day, the trachoma cases for two months and the conjunctivitis cases for one month. Surgical treatment was discarded, except for special cases.



Dr Vincent Tabone examining a Taiwan schoolboy

[1] Based on a report by Dr Chang-Yui Shu, Public Health Administrator, WHO Regional Office for the Western Pacific

[2] *Wld Hlth Org. techn. Rep. Ser.*, 1952, 59, 14

After two months of treatment, 75.1% of the conjunctivitis cases were declared cured, while, of the trachoma cases, 42% were cured and a further 46.1% showed some improvement. There was no appreciable difference between the results for cases treated four times a day and those for cases treated twice a day. Tresomide (sulfamerazine, sulfadiazine and sulfathiazole combined) was given to 141 cases which had shown no appreciable improvement after two months' treatment with ointment; as a result, 66 of these cases were cured.

The results of the investigation were felt to justify the launching of a mass campaign.

Plan of operations

Under an agreement between the Government, WHO and UNICEF, it was decided to aim at the free examination, treatment and follow-up of all pupils in Taiwan schools (a total of about 1 200 000 children) and of about 100 000 family contacts. It was hoped in this way to effect a substantial reduction in the number of cases of trachoma and conjunctivitis, and in the sources of infection. The campaign was to be conducted by the Government, and WHO was to provide technical advice. Equipment, supplies and transport were to be provided by UNICEF.

The estimated Government expenditure for the campaign as originally planned was approximately $215 000. This was to cover salaries, locally available equipment and supplies, stationery, fuel and maintenance of UNICEF vehicles, and storage and distribution of UNICEF supplies. UNICEF agreed to contribute vehicles (station wagons), pocket magnifying glasses, antibiotic ointment, sulfonamides and absorbent cotton to a value of $327 000.

Staff

The Taiwan Provincial Health Commissioner was entrusted with the administration of the campaign. A Trachoma Control Committee, including representatives of the Department of Education and of the College of Medicine of the National Taiwan University, was appointed to advise on the conduct of the operations. The Director of the Taiwan Trachoma Control Centre was put in charge of the day-to-day administration of the campaign, and the collection and analysis of records.

In preparation for the campaign, the Trachoma Control Centre held 3-day refresher courses for ophthalmologists from 12 provincial hospitals. These ophthalmologists in turn undertook the training, guidance and supervision of trachoma teams, and special treatment of serious cases referred to them by the teams.

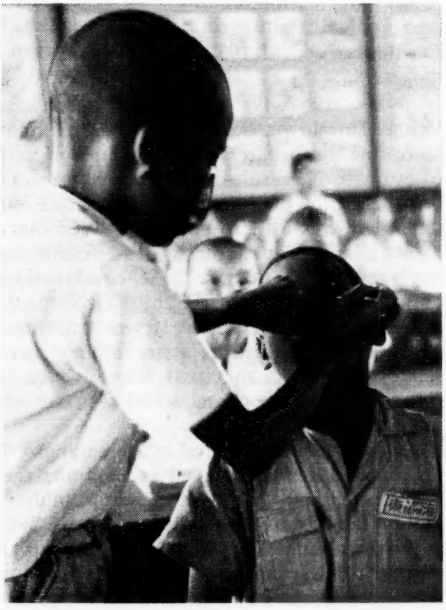
A trachoma team, consisting of one doctor and one nurse, was recruited from each of the 365 health stations in Taiwan. Following training at one of 12 provincial centres, each team conducted the campaign in the area served by its health station. Team responsibilities included: health education; the instruction of school directors and teachers in treatment methods and in the maintenance of records; the examination of schoolchildren and the prescription of appropriate treatment; supervision of the treatment given by teachers; the carrying-out of urine tests for children receiving sulfonamides. In some schools these tasks were performed by the regular school physicians.

Examination and treatment

The campaign started in September 1954. During the first month, trachoma teams which had completed their training worked half-a-day for five days a week, aiming at an average of between 150 and 200 examinations each per half-day.

The treatment of infected children started immediately after examination, the children in the lower classes of each school being treated by their teachers. At the appointed time, the children who were to be treated washed their hands and were given individual tubes of antibiotic ointment. Each child in turn went up to the teacher, who took the ointment and applied it under the lower lids of the child's eyes. The child then spread the ointment with two small squares of cotton

or of tissue provided by the teacher. When all the children had been treated, the tubes of ointment were collected and put away. In the higher classes, the children treated one another under the supervision of a teacher. Each child received two treatments a day.



A Taiwan schoolboy applying antibiotic ointment to the eyes of a schoolfellow

The average amount of ointment used was two 3.5-gram tubes for each case of trachoma, and one tube for each case of conjunctivitis. Additional ointment was supplied when these amounts were found to be insufficient.

Trachoma cases were re-examined after two months' treatment, and classified as cured, improved, unchanged, or aggravated. All uncured cases continued to receive the same treatment for another month. The unchanged or aggravated cases were also given sulfonamides orally, the dosage being 40-50 mg per kg of body-weight each day for 20 days. Cases showing any untoward symptom due to medication were referred to doctors.

After a second re-examination, uncured cases were treated for a further month in the same way. Care was taken not to administer sulfonamides to unchanged or aggravated cases until 10 days after the previous course had finished.

The third re-examination took place four months after the beginning of treatment. Uncured cases were then referred to the ophthalmologist at the nearest hospital for further treatment or, if necessary, operation.

Cases of conjunctivitis and other infectious eye diseases were treated for one month, and re-examined a month later.

Extension of the campaign

During 1955 it was decided to extend the campaign and continue it throughout 1956. The number of schoolchildren and family contacts to be covered was increased to 2 013 000, so as to include children entering school for the first time during 1955 and 1956. It was estimated that this extension would mean a further cost to the Government of more than $500 000. An additional $342 000 was allocated by UNICEF for antibiotic ointment and sulfonamides, and for tyres and inner tubes.

At the end of June 1955, 275 trachoma teams had been trained and were at work. By early 1956, 448 teams (including 83 teams composed of school physicians and school nurses) were engaged in the campaign, and over 30 000 schoolteachers were giving treatment and health talks.

Assessment of progress

A WHO consultant—Professor Ida Mann—went to Taiwan in June 1956 to assess the progress made. By then, all children at school had been covered by the campaign, and preparations were under way for the examination and treatment of new pupils entering school the following September.

Professor Mann examined data on a sample of 1633 schoolchildren from urban, rural, salt-producing and tribal (aboriginal) areas. The sample included children treated

for trachoma at the beginning of the campaign (September-December 1954), and children treated on entering school for the first time a year later. The results of treatment were as follows:

	Percentage of active cases			
	First group		*Second group*	
	Sept. 1954	*June 1956*	*Sept. 1955*	*June 1956*
Urban areas .	76.9	10.4	62.2	15.1
Rural areas .	58.9	14.2	38.4	8.6
Salt-producing areas . . .	66.6	27.7	69.0	32.6
Tribal areas .	85.4	34.9	80.8	28.2

The disease was relatively mild in city children, moderately severe in rural children and severe in children from salt-producing and tribal areas.

The WHO consultant made a number of recommendations for the future conduct of the campaign, as a result of which certain changes were introduced. First of all, it was decided to re-examine trachoma cases 6 months and 12 months after treatment in order to gain a clearer idea of the long-term results. Likewise, it was decided not to undertake a second course of treatment for at least six months—or preferably a year—after the initial treatment. To deal with relapses and to ensure that no child left school with active trachoma, all children would be re-examined at the beginning of their final school term and, if necessary, given another course of treatment. As trachoma is rarely contracted after the age of 12, this seemed to be a good way of ensuring that its prevalence among the rising generation would be reduced to a minimum.

The WHO consultant considered that it might be more economical to use antibiotics in oil, instead of ointment, for treatment. Trials on separate groups of 5000 children each were therefore started to assess the relative merits and costs of treatment by antibiotic ointment and by antibiotics (Achromycin and Aureomycin) in oil. A 6-week course of initial treatment was also tried out. In areas where the trachoma infection rate among schoolchildren was more than 50%, the mass treatment of family contacts was started.

Professor Mann also recommended the mass treatment of the whole population in the tribal areas, where insanitary conditions prevailed and the disease was particularly widespread and severe. It was decided to try out courses of treatment with sulfanomides in those areas.

Position at end of 1957

In late 1957 Dr Vincent Tabone again visited Taiwan on behalf of WHO, this time to review the progress of the campaign and to evaluate the results of the trial treatments introduced the previous year. He considered that there was little to choose between ointment and oily drops as means of administering antibiotics, and favoured the continuation of the 2-month course of initial treatment. He noted that there were fewer trachoma cases than in previous years among new school entrants in the areas where the mass treatment of family contacts had been carried out.

As a result of these and other findings by Dr Tabone, it was decided to continue the examination and treatment of schoolchildren along the lines originally adopted, but with re-examinations 12 months after initial treatment. Re-examinations of children about to leave school are also being continued. The mass treatment of family contacts is to continue in as many places as possible, and the staff of the Trachoma Control Centre is being strengthened. Trial treatments of pre-school children with antibiotic ointment have been started as a preliminary to their mass treatment. A special short course of treatment has been instituted for aborigines living in tribal areas, where each patient will receive sulfa tablets for two weeks, the total daily dose being 50 mg per kg of body-weight. It is estimated that 140 000 aborigines will be treated in this way.

In the opinion of Dr Tabone, it should be possible to withdraw international assistance from the programme before the end of 1962, by which time the mass treatment of aborigines and of 1½ million pre-school children should be successfully completed.

AËDES AEGYPTI ERADICATION IN THE UNITED STATES*

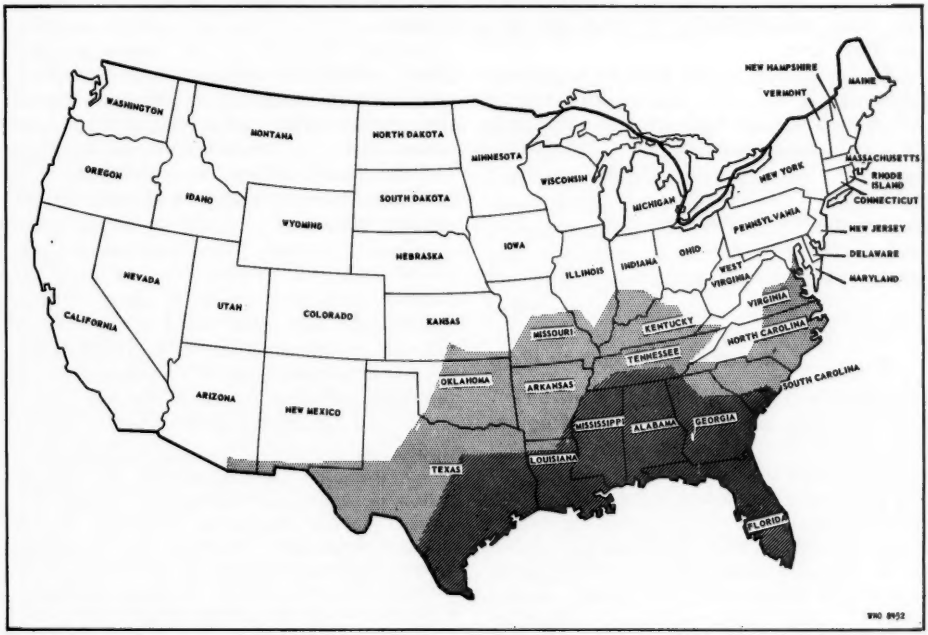
For some time after the Second World War, very little attention was paid by the United States health authorities to *Aëdes aegypti*, the mosquito vector of yellow fever. Although this mosquito is present in some regions, no epidemic of yellow fever has been noted in the United States since 1905 when the disease broke out in New Orleans. The last isolated case was notified in 1924 at Houston, Texas.

Recently, however, there has been a renewal of interest in this insect. The wave of jungle yellow fever which in 1948 began in the west of Panama (an area where yellow fever had been unknown for 43 years) has now reached the southern frontier of Mexico. While it is true that this form of yellow fever primarily affects monkeys—being transmitted by forest mosquitos of the genus *Haemagogus*—unvaccinated humans who go into the forest can become infected. Some anxiety was also caused by a case of urban yellow fever notified in 1954 in Trinidad [1] and probably due to the bite of *A. aegypti*.

* Based on an article by G. R. Hayes, jr & M. E. Tinker in *Bol. Ofic. sanit. panamer.*, 1958, 45, 223

[1] See *Chron. Wld Hlth Org.*, 1956, 10, 39.

DISTRIBUTION OF *AËDES AEGYPTI* IN THE UNITED STATES



Zone where A. aegypti *was found during the 1956 and 1957 surveys*

Zone where presence of A. aegypti *has been reported*

The United States health authorities are less concerned about the northward spread of jungle yellow fever than about the introduction of the virus by human beings, animals or mosquitos—a particular danger in these days of rapid communications. Once in the country, the virus would find a permanent host in *A. aegypti* which abounds in certain regions; this would renew the danger of transmission of urban yellow fever.

Even before the wave of jungle yellow fever in the Americas began to spread towards the north, the Pan American Sanitary Organization had recommended the eradication of *A. aegypti* as a means of preventing large-scale epidemics. Some countries in the Region have conducted campaigns against this mosquito in recent years and have succeeded in eradicating it from their territories.[2] The United States, however, has not yet undertaken a nation-wide eradication programme, though a few partial surveys have been made since the war. The authorities are now contemplating a campaign on a national level.

The first steps would have to include the delimitation of the zones inhabited by *A. aegypti* and an evaluation of the density of the mosquito populations. Of the surveys already made, the most important were one in 1956 covering 25 communities, and another in 1957 covering 8 communities. The map on page 377 gives some idea of the results. The dark shading shows the zone where *A. aegypti* is frequently found. Its boundary line passes through Charleston, Columbia (S.C.), Augusta, Atlanta (Ga.), Nashville, Memphis (Tenn.), Monroe (La.), Dallas (Tex.) and Nuevo Laredo (Tamaulipas, Mexico). The mosquito is also found in the zone indicated by lighter shading, though less frequently because the environment is not favourable.

The partial surveys of 1952 showed some contraction of the *A. aegypti* zones, and this tendency is confirmed by the records for 1956 and 1957. This gradual decline may be due in part to the widespread use of insecticides, particularly in agriculture, to improved living conditions and to the health education of the public who are now aware of the danger inherent in potential mosquito breeding-places.

It should, however, be borne in mind that, despite this apparent improvement in the situation, *A. aegypti* is still present in all the southern states and is multiplying in some areas. If it is to be eradicated, the campaign will be a large and costly undertaking, since it will have to cover an area of some 300 000 square miles.

[2] See *Chron. Wld Hlth Org.*, 1956, **10**, 347.

Reports of Expert Groups

MENTAL HEALTH AND ATOMIC ENERGY

WHO has recently published the findings of an international group of experts, convened to study the mental health aspects of the peaceful uses of atomic energy.[1] The participants, who were representative of several different disciplines—psychiatry, atomic and radiation medicine, public health, social anthropology, and scientific journalism—examined reports from all over the world concerning the emotional impact of atomic energy development as reflected in everyday life, public statements, newspaper comment, letters to atomic, health, political and religious bodies, as well as the results of clinical inquiries.

In the minds of people everywhere, atomic energy remains a threatening and mysterious force, interpreted very often in magical rather than rational terms and fraught with irrational hopes and fears. Confronted by the tremendous scientific and technical achievement of atomic science—the intellectual or vocational prerogative of the few—the great mass of people, according to the Study Group, is in an analogous position to that of the young child first experiencing the world. Some understanding of this phenomenon can be obtained from a study of the ancient, primeval attitudes belonging to the " childhood of mankind ".

" Man's anxiety about his own search for knowledge and for power is reflected almost universally in myth and legend. For example, Prometheus, in stealing fire, the prerogative of the gods, not only came to understand this prerogative but appropriated it for the use of men, and for this act of presumption was terribly punished. Pandora wantonly unleashed forces she could not control, because she once again tampered with the prerogative of the gods, but since her action was accidental and innocent, mankind was left with Hope. However, when Faust evoked the Devil in order to assume the powers of God, there was nothing accidental about his action and he was in consequence doomed to devastating punishment . . . The association of knowledge with evil and punishment exists nowhere more explicitly than in the story of the Garden of Eden, but it is found also in many other places, as, for instance, in an ancient Egyptian saying: ' When man learns what moves the stars, the Sphinx will laugh and life will be destroyed.'

" There can be no doubt about the universality of this feeling of man's punishment for presumption, and it finds an arresting parallel in that universal experience of all mankind—that of being a child."

From the point of view of development, being a child means being helpless and dependent upon powers that seem capable of bestowing almost infinite benefits or of inflicting ultimate punishment. Children who defy parental authority can relapse into primitive forms of thought and feeling—and such a reaction is characteristic of much of the psychological attitude towards nuclear energy.

Brain damage from radiation

The Study Group examined the question of the pathogenic effects of radiation on brain function. Data are scanty and the need to develop an international exchange of information on research findings is becoming increasingly apparent. An indisputable fact which has emerged is that nervous tissue, although one of the most resistant of all tissues, can be severely damaged by doses of radiation below the lethal limit. Experimental work on animal embryos and young animals, moreover, has confirmed the radiosensitiveness of nervous tissue during the

[1] WHO Study Group on the Mental Health Aspects of the Peaceful Uses of Atomic Energy (1958) *Report* (*Wld Hlth Org. techn. Rep. Ser.*, No. 151), 53 pages. Price: 3/6, $0.60, Sw. fr. 2. Also published in French and Spanish.

developmental period, for doses as low as 100-200 roentgens have been shown to cause serious malformations of the brain. The adult brain, however, appears to be exceptionally resistant to radiation. The Study Group concludes that, with the low dosages of radiation to be encountered in the peaceful uses of atomic energy, the organic brain effects so far observed are of minor or no importance.

The socio-economic impact of atomic energy

The Study Group then examined the stresses which the advent of atomic energy will introduce into societies. In advanced countries, a second industrial revolution might interfere with whatever social equilibrium and stability have been achieved—often at great cost—particularly if the effects of atomic energy development are added to those of other technological innovations, which have already accelerated the pace of change. Says the report: " Societies have a certain threshold of tolerance for rate of change, which, if exceeded, leads in some measure to social disorganization." And, although the evidence is incomplete, it does seem that the greater the degree of disorganization in the social and cultural environment, the greater will be the prevalence of psychiatric disorder.

Still deeper concern is expressed about the effect upon the so-called under-developed areas, where the advent of atomic energy, in so far as it accelerates the process of industrialization, can add to present social problems. Yet other dangers exist:

" Where exaggerated hopes have been aroused, there may be disappointment and disillusionment when nuclear installations do not prove feasible or do not at once produce a miracle in the form of a higher standard of living . . . The repercussions from eventual disappointment may then be severe and take the form of hostility against those populations which draw major benefits from atomic energy."

The WHO experts consider that much will depend on the attention given to human factors in planning and in development.

Irrational fears and irrational hopes

The emotional response provoked by the advent of atomic energy, while bearing some similarity to the reaction produced by other forms of technical change, is often pathological, partly because of the circumstances in which atomic power has been introduced (the first atomic bomb explosions), and partly because of the very nature of this power. The Study Group agreed that this perhaps constituted the most important mental health aspect of the present situation.

" Evidence of emotional reactions to atomic matters is . . . found in everyday conversation. Atom bomb tests are frequently blamed for disagreeable weather or for the failure of the harvest. Fears of the ' fall-out ', of the inadequate disposal of atomic waste, of the pollution of water and milk supplies . . . fears of sterility or of harmful genetic effects are direct expressions of anxiety. These fears conflict with many official announcements put out about risks and safety measures . . . "

In this context, the experts discussed the notion of " free-floating anxiety " and the various ways in which the individual deals with such anxiety, being unable to tolerate it in his consciousness. The mechanism of " displacement ", for example, is defined as the transference of anxiety to some object other than the true one—an object which may have anxiety-raising qualities in its own right or may, on the other hand, be quite inappropriate. " Rationalization " is a special form of displacement. In such a process, apparently reasonable causes are evinced in explanation of irrational feelings. Finally, there is the mechanism of " overcompensation "—" a metaphorical whistling to keep up courage ".

The anxiety-producing qualities of atomic energy are ascribable to the peculiar nature of radiations—unseen, unheard, untasted, unsmelt, unfelt, uncontrollable (as far as the individual is concerned), and emanating from an almost infinitely small source. Of all the fears associated with atomic energy perhaps one of the deepest and most subtle is that of the setting-up of a biological chain-reaction: that fall-out or atomic waste will contaminate water, soil, fish, plants, animals,

and eventually people, their children and their children's children.

In this discussion of unhealthy emotional responses, the Group drew attention to a somewhat surprising discovery—namely, that fantasies about nuclear energy, unlike those connected with other expressions of mechanical power such as electricity, radio and radar, were absent from the delusional systems of psychotic and psychoneurotic patients. The Group felt that this finding was worthy of further investigation.

Interaction between scientists, authorities and the general public

Surrounded by confusion and fears, the general public is apt to have little confidence in pronouncements, either scientific or governmental. On the one hand, the people are confronted with apparent contradictions, stemming from the widespread publicizing of disagreement among scientists, not only with regard to nuclear energy matters, but also in connexion with such questions as poliomyelitis vaccine and the carcinogenic effects of tobacco. As the Study Group states: " Scientists do not make the task easier when they vacillate between statements limited to their scientific competence and statements which have the mantle of science but which are actually expressions of value and even of policy decision."

A general tendency to question the veracity of political dicta, on the other hand, is perhaps partly due to the public's wariness of propaganda, after the experience of two world wars.

The relations of scientists and politicians also generate anxiety, because of the uncertainty as to who wields the power and how:

> " In one sense, the political leader has power over the scientist, but in another he is dependent on the scientist and hence in his power . . . The advent of nuclear power has taken the ultimate strength out of the hands of the services under political control and placed it in the hands of the scientist. The scientist is a civilian and not in the direct service of the State, and in his role of scientist owes his first allegiance to scientific truth. No social institutions have been developed to hold him individually in thrall to the civilian power; as a scientist he has had no special training in discipline and obedience. It is not unnatural, therefore, that political leaders develop intense hostility to the scientists and so promulgate unrealistic decisions in attempts to control the scientific situation in the teeth of the scientists."

The report points out that few, if any, political leaders have had the scientific training to enable them to see the ultimate implication of scientific work. The effect is general bewilderment and a suspicion " that the political leader instead of being the master of the situation is, in fact, caught between the scientists and the next election ".

The press

Since the public learns about atomic developments mainly from the press, the role of the journalist appears to be extremely important. The Study Group was impressed by the general standard of integrity with which journalists handled atomic energy news, but regretted a widespread tendency to present this news under scare headlines which left an enduring impression, even if the substance of the story was sober and at times reassuring. The tacit newspaper principle is that " bad news is good news ", and this has profound implications for mental health and morale.

Annexed to the Study Group's report is an analysis of press comment on atomic energy. The sample surveyed consisted of 504 press-cuttings from 31 countries, and the files of three British daily papers, as well as those of a weekly magazine and a monthly digest published in the USA.

Mental health tasks

The WHO experts felt that the complexity of underlying emotions in the changing environment brought about by the advent of the atomic age needed to be recognized more widely among leaders of thought and action. The first task, they said, seemed to be the establishment of what might be termed a culture of change, in which change and reorientation could take place without upheaval. The chief effort would have to be directed towards children. Their upbringing

must enable them to bear with insecurity and to face reality; it must be free from anxiety and hate, producing in individuals self-reliance and a sense of responsibility towards others. And those who held responsible positions in public life—doctors, teachers, the clergy, the authorities—must be educated in mental health requirements.

As regards local action, the Group discussed a draft plan for the education of the community in matters pertaining to atomic energy. In essence, the idea is to form small teams, each consisting of—for example—a psychiatrist, a psychologist, a sociologist and a journalist. These teams would study local conditions and contribute to the planning of new atomic enterprises and to the acceptance of such schemes by the populations concerned.

The Study Group also made a number of specific suggestions concerning research and the work to be done in connexion with mental health and the siting of atomic installations, the production of atomic power, and the medical use of radiations.

In conclusion, the Group stated that its findings were in no way alarming, although concrete enough to warrant the attention of those in authority. The Group hoped that such persons would be prepared to accept its conclusion that the behavioural sciences could make a valuable contribution to the task of adapting mankind to the advent of atomic power, making the process as painless and harmless as possible and allowing man to reap a rich harvest from the seed his inventive genius has sown.

Notes and News

Diarrhoeal disease in Guatemala

Investigations into the prevalence of diarrhoeal disease are at present being carried out in Latin America by research workers attached to WHO or to bodies closely connected with the Organization such as the Pan American Sanitary Bureau (PASB), which acts as the WHO Regional Office for the Americas, and the Institution of Nutrition of Central America and Panama (INCAP), which is administratively dependent on PASB, and subsidized by PASB and WHO.

In nearly all the countries of Latin America, diarrhoeal disease in infants and children is a serious health problem.[1] Surveys were recently made in twelve localities in Guatemala —which has the highest mortality rate from this cause in Central America—to determine the prevalence of *Salmonella* and *Shigella* in children in the 0-10 years age-group, without reference to the presence or absence of actual diarrhoeal disease.

Between October 1955 and March 1956, 2342 cultures prepared from rectal swabs were examined. Micro-organisms of the *Salmonella* genus were observed much less frequently than those of *Shigella*, the percentages being 0.55 and 7.5 respectively. Data on environment were obtained by direct observation and by the study of local statistics. The information was classified, taking the following factors into account: sanitary facilities; supplies of potable water; disposal of waste waters; ethnological characteristics; altitude. In all cases where sanitary facilities were lacking or inadequate and the level of personal hygiene was consequently poor, the prevalence rate was very high indeed. The rate for the indigenous children included in the survey was the highest of all.

The high prevalence rates for *Shigella* were similar to rates recorded some time ago in selected areas of the United States where *Shigella* infection was the chief cause of diarrhoeal-disease mortality.

The Guatemala survey was directed by

[1] See *Chron. Wld Hlth Org.*, 1958, **12**, 193.

M. Dorthy Beck, PASB consultant in medical bacteriology, J. Antonio Muñoz, nutritionist attached to the Guatemala Public Health Department and at present WHO consultant in Basutoland, and Nevin S. Scrimshaw, Director of INCAP, with the collaboration of INCAP, the Nutrition Section of the Guatemala Public Health Department, and the Bacteriological Section of the State Public Health Department, Berkeley, Calif., USA.

Biological control of insect vectors of disease

The development of resistance to insecticides among insect vectors of disease has led to a search for other methods of control. Although biological control by parasites has proved inadequate under normal conditions, agricultural research workers have found that it can be completely effective in isolated situations.

A WHO-sponsored experiment in the biological control of the mosquito *Aëdes polynesiensis*—a vector of filariasis—is at present being carried out in the Tokelau Islands in the South Pacific. In an attempt to control or eliminate this mosquito, the fungal parasite *Coelomomyces stegomyiae* has been introduced on Nukunono Atoll. A second atoll, Atafu, is receiving insecticidal treatment, while a third, Fakaofa, is being left untreated for purposes of comparison.

The WHO team undertaking the experiment was transported to the Tokelau Islands as part of a New Zealand Government mission sent there for work in connexion with the International Geophysical Year. The Organization is deeply indebted to the New Zealand Government for its co-operation in this respect, since without it the experiment might have been too costly to contemplate. The leader of the team is Dr Marshall Laird from the Institute of Parasitology, McGill University, Canada, who is a well-known authority on biological control and has spent many years studying insect parasites and predators in the Pacific islands. Dr D. H. Colless of the Department of Parasitology, University of Malaya, Singapore, prepared the infected larvae and dried cultures used in the experiment.

Water pollution in Europe

In January of this year, a group of environmental sanitation experts, convened by the United Nations Economic Commission for Europe (ECE), met in Geneva to discuss problems of water pollution in Europe. The participants in the meeting included Mr N. de Baenst (Belgium), Mr O. Jaag (Switzerland), Mr Y. Lebedev (USSR), and Mr W. Madèra (Czechoslovakia). Dr A. Key, Senior Sanitary Officer, Ministry of Housing and Local Government, London, England, attended as WHO consultant. Officials of ECE, WHO, the Food and Agriculture Organization of the United Nations (FAO) and the World Meteorological Organization (WMO) were also present.

The report of this group [1] was discussed by ECE at its session in Geneva in April. It proposes two definitions of water pollution, both of which take the impairment of the downstream uses of water as the most satisfactory basis for the measurement of pollution—a concept which is now almost universally accepted. The report also discusses the conflict of legitimate interests involved in the control of water pollution. In thickly populated and industrialized areas, the only solution to the problem seems to be the organization of river pollution control bodies, each of which should deal with an entire river basin, regardless of administrative and even political boundaries.

* * *

The question of water pollution in Europe was also considered by the sixth European seminar for sanitary engineers, which was held in Nice, from 17 to 25 September, under the joint auspices of the WHO Regional Office for Europe and the Government of France. The aim of these seminars is to enable sanitary engineers, public health administrators and others concerned with environmental sanitation in Europe to discuss common problems and to exchange scientific and technical information.

The principal topics considered by the

[1] Unpublished working document E/ECE/311

seminar were: (1) the pollution of coastal waters by domestic and industrial wastes (ground-water and surface-water pollution had been discussed at the two preceding seminars); (2) the collection, treatment and utilization of solid wastes; and (3) the treatment and utilization in agriculture of liquid and solid wastes from rural and urban communities. The seminar also heard a progress report on the control and prevention of water pollution by radio-active wastes.

The following countries were represented: Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, USSR and Yugoslavia.

Environmental sanitation in the South Pacific

A WHO seminar on environmental sanitation was held at Port Moresby, Papua, from 5 to 23 May 1958, with the co-operation of the Government of the Territory of Papua and New Guinea. It was attended by 25 participants and observers representing 15 countries and territories in the southern part of the Western Pacific Region. A WHO consultant, Professor Earnest Boyce, of the University of Michigan, visited a number of these countries and territories beforehand to help with preparations for the seminar.

Four main topics were discussed: (i) the adaptation of environmental sanitation programmes to existing cultural patterns; (ii) health education and legislation in connexion with environmental sanitation; (iii) the responsibilities and duties of public health personnel engaged in environmental sanitation programmes; (iv) the training of environmental sanitation staff for work in the South Pacific islands.

The Port Moresby seminar was the third of a series of " zonal " seminars on environmental sanitation held by the WHO Regional Office for the Western Pacific. The first two, covering different groups of countries, were held in Taipeh, Taiwan (China), in 1956, and in Singapore in 1957. They dealt respectively with the collection, disposal and utilisation of organic wastes, and with rural water supplies.

Waterworks training course

Eighteen waterworks officials from 12 territories in the Caribbean area attended a refresher course held in Port of Spain, Trinidad, from 14 April to 3 May, by the Pan American Sanitary Bureau (WHO Regional Office for the Americas) in co-operation with the Government of Trinidad and Tobago. The course was intended specifically for government officers in charge of domestic water-supplies in the British territories in the Caribbean.

Two short-term consultants, Professor Edward W. Moore of Harvard University and Professor George T. Bryant of Johns Hopkins University, were provided by PASB/WHO to prepare and present the lectures given at the course. These covered all the important phases of the collection, treatment and purification, and distribution of water for domestic use.

The effect of radiation on human heredity

The WHO Expert Committee on Radiation met in Geneva from 28 July to 2 August to consider suitable methods for use in genetic research among populations living in areas where the natural radiation from sand, rocks or building material is higher than normal. The chief question discussed was the nature of the statistical data obtainable from such areas which would be likely to throw most light on the effect of radiation on human heredity. The Committee's sources included the preliminary findings of WHO consultants who had already visited an area of high natural radiation in the South of India.

The members of the Committee were: Professor J. A. Böök (Sweden), Dr J. C. Bugher (USA), Professor L. Cavalli-Sforza (Italy), Professor A. Franceschetti, Vice-Chairman (Switzerland), Dr A. R. Gopal-Ayengar (India), Professor J. V. Neel, Chairman (USA), Dr W. J. Schull, Rapporteur (USA), and Dr A. C. Stevenson

(United Kingdom). Professor V. R. Khanolkar (India) and Dr D. Klein (Switzerland) acted as consultants for the meeting. The Secretary was Dr I. S. Eve (WHO).

Respiratory virus diseases

The meeting of the WHO Expert Committee on Respiratory Virus Diseases, held in Stockholm during August, gave specialists from a number of countries an opportunity to pool experience gained during the 1957 influenza pandemic. The intensive studies undertaken in many parts of the world during this pandemic—together with the work of the WHO Influenza Centres over the past ten years—have produced a mass of new knowledge on the natural patterns of epidemic and pandemic influenza. The Committee reviewed current methods of treatment in the light of this knowledge, and considered the results of the special study undertaken by WHO during the recent pandemic to find out whether animals play a part in the epidemiology of influenza. The latter subject was also discussed at a meeting between the Committee and the Joint WHO/FAO Expert Committee on Zoonoses.

As well as discussing influenza, the Committee reviewed new knowledge of other respiratory virus diseases, including the heterogeneous group of infections known as the common cold.

The following experts took part in the meeting: Dr C. H. Andrewes (United Kingdom), Dr F. M. Davenport (USA), Dr H. Fukumi (Japan), Dr M. R. Hilleman (USA), Dr I. G. K. Menon (India), Professor J. Mulder (Netherlands), Professor C. H. Stuart-Harris (United Kingdom), Dr A. Svedmyr (Sweden), Professor V. M. Zhdanov (USSR). Dr A. Payne (WHO) acted as Secretary to the Committee.

Expert Committee on Malaria

The WHO Expert Committee on Malaria met in Lisbon from 15 to 23 September. Since the appearance of the Committee's sixth report [1]—the first comprehensive publication on the subject of malaria eradication—a number of new problems have arisen in this field.

Among the subjects discussed by the Committee were: criteria for determining when the transmission of malaria has been interrupted; epidemiological surveillance; the use of drugs in the various phases of an eradication programme; health education and public relations in connexion with malaria eradication programmes.

In addition, the Committee reviewed a number of less general problems such as: suitable eradication techniques for areas of low endemicity; the protection of people living in fixed or mobile temporary dwellings; the possibility of organizing malaria eradication within the framework of the general public health administration; problems arising in the use of insecticides, such as sorption. The situation as regards the resistance of anopheline vectors to insecticides was also discussed.

The members of the Committee were: Professor M. Ciuca (Romania), Dr A. Ejercito (Philippines), Dr S. Farman-Farmaian (Iran), Dr A. Gabaldón (Venezuela), Professor G. Giglioli (United Kingdom), Professor G. Macdonald (United Kingdom), Dr O. Mastbaum (Swaziland), Dr B. A. Rao (India), and Dr R. A. Roque (Portugal). Dr G. R. Coatney (USA) and Dr P. F. Russell (USA) acted as advisers to the Committee; Dr E. B. Weeks (WHO) was Secretary.

Biological standardization

The WHO Expert Committee on Biological Standardization met in Geneva, in September, to review work in progress on various substances for which international standards had been proposed. The Committee also considered the texts of the recommended requirements for poliomyelitis vaccine, yellow fever vaccine and cholera vaccine, and of the general requirements for manufacturing and control laboratories, as formulated by the

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 123

WHO Study Group on Recommended Requirements for Biological Substances.

The following experts were invited to serve on the Committee: Dr M. L. Ahuja (India), Dr D. G. Evans (United Kingdom), Dr P. Krag (Denmark), Dr R. Prigge (Germany), Dr J. Tomcsik (Switzerland), Dr G. V. Vygodchikov (USSR), and Dr H. Welch (USA). Dr D. R. Bangham (United Kingdom) and Dr O. Maaløe (Denmark) were WHO consultants for the meeting, and Dr E. C. Hulse represented FAO. Dr N. K. Jerne (WHO) was Secretary of the Expert Committee.

Health statistics

Thanks in part to the work of WHO in connexion with the classification of causes of death, it is now possible to establish internationally comparable mortality statistics. The terms and rates used in morbidity statistics, however, still vary greatly from country to country.

The WHO Expert Committee on Health Statistics therefore met in Geneva, from 29 September to 4 October, to review the various definitions of morbidity terms and rates at present in use, and to select those which could be recommended for general application. The Committee also discussed future tasks in the field of vital and health statistics, including the preparatory work in connexion with the next revision of the International Classification of Diseases, Injuries and Causes of Death. Plans for regional seminars and meetings with the aim of improving health statistics were considered.

The members of the Expert Committee were: Mr F. F. Harris (Canada), Dr Gertrude Kallner (Israel), Dr Forrest E. Linder (USA), Dr W. P. D. Logan (United Kingdom), Dr B. Mikat (Germany), Dr B. Skrinjar (Yugoslavia) and Dr M. J. Aubenque (France). Dr B. Pirc (WHO) acted as Secretary of the Committee.

Expert Committee on Plague

Although the world-wide incidence of plague has been substantially reduced in recent years, the public health authorities in many countries are still greatly concerned with the prevention and control of this disease.

Recent epidemiological studies in various parts of the world have indicated that wild rodent plague exists in several areas where it has not been detected previously and where it has probably remained unnoticed for a number of years. Several species of wild rodent, often showing considerable resistance to the effects of *Pasteurella pestis* infection, may form a local reservoir from which, given favourable epidemiological conditions, the disease may spread to more susceptible species of wild rodent, to domestic rats and to the human population. While modern therapy and plague control techniques make it possible to save the lives of the majority of plague cases and to control outbreaks promptly and effectively, the risk of an epidemic is greatest precisely in those areas where serious damage may occur before medical aid and control can be organized on the spot.

The WHO Expert Committee on Plague met in Geneva, from 15 to 20 September, to review recent epidemiological findings in connexion with plague and advances in knowledge and experience of the therapy and control of the disease. The possibility of profiting from the present low incidence of plague to initiate programmes of eradication was discussed, as well as the measures which should be taken in countries where human plague no longer seems to represent a serious public health problem but where the risk of epidemics in rural areas requires vigilance.

The following experts served on the Committee: Dr S. Anwar (Indonesia) Dr R. Baltazard (Iran), Dr R. Devignat (Belgian Congo), Dr R. B. Heisch (Kenya), Dr Karl F. Meyer (USA), Dr B. Pastukhov (USSR), and Dr S. C. Seal (India). Dr M. Giaquinto (WHO) was Secretary to the Committee, while Dr R. Pollitzer (USA) acted as consultant.

Analysing radio-active contamination

As the use of atomic energy is extended, the potentiality for radio-active contamina-

tion of air, water and agricultural products increases. Such contamination can be caused by uranium and thorium processing plants, atomic power stations, reactor installations and nuclear experiments, as well as by the use of radioisotopes in medicine, research and industry.

A Joint WHO/FAO Expert Committee on Radiochemical Methods of analysis met in September, in Geneva, to consider methods which might be recommended for the determination of radio-active elements in the components of man's environment and in body fluids. The members of the Committee included: Dr Lyle T. Alexander (USA), Dr C. L. Comar (USA), Dr J. H. Harley, Rapporteur (USA), Professor Yoshio Hiyama, Vice-Chairman (Japan), Dr H. Jammet (France), Dr Lidia A. Katchur (USSR), Mr Lars Lund (Norway), Dr A. S. McLean (United Kingdom), Dr C. Gordon Stewart, Chairman (Canada), Dr Conrad P. Straub (USA), Dr F. J. Woodman (United Kingdom). Mr L. Jeanmaire (France) and Dr M. F. Milligan (USA) acted as consultants; Dr L. Dobson (WHO) and Dr R. A. Silow (FAO) were Joint Secretaries.

Iron deficiency anaemia

Iron deficiency anaemia is probably the most common deficiency disease in the world at the present time, affecting especially growing children and women in the reproductive period of life. In tropical and underdeveloped countries, chronic blood loss and a poor diet combine to make the disease particularly prevalent among populations suffering from endemic intestinal parasitism.

The WHO Study Group on Iron Deficiency Anaemia met in Geneva at the end of September to discuss the etiology, detection and evaluation of the disease as an initial step in developing programmes for its prevention and treatment.

The members of the Study Group were: Dr H. Foy (Kenya), Dr M. Layrisse (Venezuela), Dr M. Mofidi (Iran), Professor V. Ramalingaswami (India), Professor Richard V. Vilter, Chairman (USA), Professor A. W. Woodruff (United Kingdom). The Nutrition Division of FAO was represented by Dr Ronchi Proja. Dr Ruth C. Steinkamp, Instructor in Medicine, Washington University, St. Louis, Mo., USA, acted as WHO consultant for the meeting, and the Secretary was Dr R. C. Burgess (WHO).

Expert Committee on Addiction-Producing Drugs

The addiction liability of a number of new analgesic drugs from different groups of substances with morphine-like effect was considered by the WHO Expert Committee on Addiction-Producing Drugs at its meeting in Geneva in October. On the basis of its recommendations, the Director-General of WHO will decide on the status of international control which should be applied to these drugs. His decisions will in turn be passed on to the Secretary-General of the United Nations for communication to the States parties to the various international conventions on the control of narcotic drugs. The Committee also dealt with requests from several governments for the exemption from international control of certain preparations containing, among other substances, some of a narcotic character at present under control.

Other questions considered by the Committee were: the inclusion of narcotic drugs in aircraft first-aid kits; the use of international non-proprietary names for drugs under international narcotics control; the new draft of a "Single Convention on Narcotic Drugs"; and the possibility of assessing, by clinical methods, the development of tolerance to and physical dependence upon narcotic drugs. Finally the Committee once more discussed the group of habit-forming (as distinct from addiction-producing) drugs, which are known as "tranquillizing" agents. The use of these drugs is still on the increase and has given rise to concern in many countries.

The members of the Expert Committee were: Dr N. B. Eddy, Chairman (USA), Professor L. Goldberg (Sweden), Professor G. Joachimoglu, Chairman (Greece), Professor J. La Barre (Belgium), Professor

B. Lorenzo Velázquez (Spain), and Mr J. R. Nicholls, Rapporteur (United Kingdom). The Secretary of the Committee was Dr H. Halbach (WHO).

Cardiovascular diseases and hypertension

In 1955, the WHO Study Group on Atherosclerosis and Ischaemic Heart Disease recommended that WHO convene an expert group " to establish uniform criteria for the clinical diagnosis and classification of cardiovascular diseases in a manner that will be applicable to epidemiological and other statistical studies ".[1] A WHO Expert Committee on Cardiovascular Diseases and Hypertension met in Geneva, in October, to discusss this matter.

The experts invited to serve on the Committee included cardiologists, an epidemiologist, a public health administrator and a pathologist. They were: Dr P. W. Duchosal (Switzerland), Dr J. Groen (Israel), Dr H. E. Hilleboe (USA), Dr J. N. Morris (United Kingdom), Professor F. Rojas (Chile), Dr D. D. Rutstein (USA), Professor J. S. Speransky (USSR) and Professor O. Torgerson (Norway). Dr T. R. Dawber, Medical Director of the Framingham Heart Disease Epidemiology Study, Mass., USA, acted as consultant. The secretary of the Committee was Dr T. S. Sze (WHO).

Public health nursing

The WHO Expert Committee on Public Health Nursing met in Geneva from 6 to 11 October 1958 to discuss the public health nursing functions which are common to all countries and the factors influencing these functions in individual countries, e.g., the status of women, educational opportunities and the national economic situation. The administration of public health nursing services and the training of nurses for these services were also discussed.

In preparation for the Committee's meeting, a questionnaire on the subjects to be discussed was sent to national nursing associations. Replies received from 49 countries indicated that the demand for public health nursing services is increasing and that the duties of the public health nurse are tending to become broader in scope. Two problems frequently mentioned in the replies to the questionnaire were the shortage of qualified staff and the inadequate budgets provided for public health nursing.

The following were invited to serve on the Committee: Miss T. K. Adranvala (India), Mrs E. de Faria Alvim (Brazil), Professor E. D. Ashurkov (USSR), Miss R. Freeman (USA), Miss G. Frère (Belgium), Miss A. A. Graham (United Kingdom), Mrs S. Nagano (Japan). WHO was represented by Miss L. M. Creelman, who served as Secretary, and by Miss E. Hill. Miss E. Hilbourne (USA) acted as consultant to the Committee.

New health education publication

The International Union for Health Education of the Public—a non-governmental organization in official relations with WHO—has recently issued the first few numbers of a quarterly publication entitled *International Journal of Health Education.* To quote from a message by Dr M. G. Candau, Director-General of WHO, published in the first number: " This periodical fills a very real gap and promises to be a vital instrument in the development of health education in the world. " Its aim is to facilitate the exchange of experiences, ideas and news on health education and to bring to health workers and health education specialists throughout the world practical information which they can use in their work. Many of the contributors are closely associated with the health education activities of WHO.

The *International Journal of Health Education* is published in French and English editions, and the annual subscription is $3.00, £1, Sw. fr. 12, or the equivalent in other currencies. Enquiries should be addressed to: The Editor, *International Journal of Health Education*, 3 rue Viollier, Geneva, Switzerland.

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1957, 117, 27-28

Changes at WHO Headquarters

Two new sections—the Education in Medicine and Allied Subjects Section, and the Public Health Education and Training Section—have been established in the Division of Education and Training Services at WHO Headquarters. They replace the Exchange of Scientific Information Section and the Assistance to Educational Institutions Section.

The Education in Medicine and Allied Subjects Section will aim at linking the teaching of medicine and the teaching of allied subjects more closely, and at improving the scientific and teaching standards of the educational staff concerned. Its functions will include: conducting essential studies and surveys; advising on the establishment or improvement of the appropriate educational institutions; assisting in the recruitment of educational staff and observing their progress; collecting, disseminating and exchanging information on educational and scientific matters; assisting regional offices with educational and training projects. The section will work in close co-operation with international scientific and educational organizations.

The Public Health Education and Training Section will have similar functions in connexion with the training of professional and auxiliary public health personnel and especially with the post-graduate training of medical practitioners in public health. It will also keep under review directories and reference works of public health importance, distribute new documentation to public health institutions and departments, and devise training programmes and curricula for personnel concerned with the public health aspects of ionizing radiation.

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A Special Office for General Medical Research Planning has been established at WHO Headquarters; it is attached to the Office of the Director-General. The purpose of the new Office is to facilitate the implementation of a Resolution of the Eleventh World Health Assembly (WHA11.35), requesting the Director-General:

"(1) to organize and arrange for a special study of the role of WHO in research and of ways in which the Organization might assist more adequately in stimulating and co-ordinating research and developing research personnel;

"(2) to prepare a plan on the basis of such study in the furtherance of research, for transmission to the twenty-third session of the Executive Board and to the Twelfth World Health Assembly, with cost estimates."[1]

Dr Erwin Kohn, formerly Chief of the Exchange of Scientific Information Section, has been assigned to direct the work of the Special Office.

[1] *Off. Rec. Wld. Hlth Org.*, 1958, 87, 32

People and Places

Dental health survey of the Eastern Mediterranean Region

WHO is at present engaged in a one-year survey of the prevalence and intensity of dental diseases in the Eastern Mediterranean Region. The following countries will be covered: Ethiopia, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Pakistan, Saudi Arabia, Sudan, Tunisia, the United Arab Republic and Yemen. The dental adviser in charge of this undertaking is Dr George Allen Nevitt of the United States.

Dr Nevitt, who was educated at the Universities of Louisville and Kentucky, has been a specialist in public health dentistry for twenty years. He is a former Chief Dental Officer of UNRRA (United Nations Relief and Rehabilitation Administration) and comes to WHO from the United States Public Health Service.

Control of communicable diseases

WHO has undertaken to help the Indonesian health authorities in the control of communicable diseases by introducing modern epidemiological methods and providing general advice on preventive medicine. Dr K. Newell will go to Indonesia in December to take part in this project.

Dr Newell was educated at Otago University, Dunedin, New Zealand, and at the London School of Hygiene and Tropical Medicine, where he obtained a diploma in public health. His experience includes

field work among the Maoris in New Zealand, research at the Central Public Health Laboratory in London, England, and lecturing at the Department of Social and Preventive Medicine of Queen's University, Belfast, Northern Ireland.

Fellowships for Indian teachers

With the active support of WHO, the Government of India has undertaken a special training programme to remedy the almost complete lack of suitably trained teachers of preventive medicine in the country. Five teachers, who were awarded WHO fellowships under the programme to study public health at the Harvard Medical School in the United States, recently returned to India to take up their duties in university departments of preventive and social medicine. They are: Dr M. L. Chugh (Punjab), Dr Henry Moses (Madras), Dr D. K. Ramadwar (Bombay), Dr. R. Sharma (Rajasthan) and Dr S. K. Upadhyaya (West Bengal). Under the same programme, Dr B. N. Lingaraju (Mysore) completed his training last year, while two more Indian teachers—Dr Lakshmi Kant (Bihar) and Dr M. C. Mittal (Madhya Pradesh)—are now studying at Harvard on WHO fellowships.

Sanitarian for malaria project

Mr Donald Landeg, of the United Kingdom, has joined the staff of the WHO-assisted malaria eradication project in Cambodia as sanitarian. Mr Landeg, who was a sanitary inspector in the Public Health Department, London, from 1948 to 1952, comes to WHO from the Medical Department of the Nigerian Government where he worked as health superintendent.

Research in sanitary chemistry

For some time, WHO has been assisting the Faculty of Engineering of the University of Alexandria, United Arab Republic, with its engineering courses and with the organization of a Centre for Sanitary Engineering Research. Professor J. Carrell Morris, Gordon McKay Professor of Sanitary Chemistry at Harvard University, has just been appointed WHO consultant in sanitary chemical research at the Research Centre.

A graduate of Princeton University, Professor Carrell Morris has had extensive experience of university teaching and of supervising laboratory work in sanitary chemistry in the United States.

Nutrition experts visit Ghana

A WHO nutrition consultant, Professor B. S. Platt, is at present in Ghana to advise the Government on the establishment of a nutrition unit within the Ministry of Health. He is accompanied by a consultant from the Nutrition Division of FAO.

Professor Platt is Head of the Department of Nutrition at the London School of Hygiene and Tropical Medicine, and Director of the Human Nutrition Research Unit of the Medical Research Council of Great Britain. He has been a member of the WHO Advisory Panel on Nutrition for some time, and served in 1954 as Chairman of the Joint FAO/WHO Expert Committee on Nutrition.

Sanitary engineering in Afghanistan

Mr Dragutin M. Knez, of Yugoslavia, recently started a WHO assignment as sanitary engineer in Afghanistan. He will act as adviser to the Afghanistan Government on programmes of rural sanitation, assisting in particular with the establishment of a rural health and training unit at Gulzar. He will also assist municipalities in matters of sanitation, and take part in training activities at the WHO-sponsored school for sanitarians at Kabul.

Mr Knez received his degree in engineering at the University of Zagreb, subsequently specializing in environmental sanitation. Before joining WHO, he was Director of the new waterworks station at Osijek, Yugoslavia.

Hospital records

Since May 1957, WHO has been helping the Government of Malaya to re-organize the records system used in Malayan hospitals, and to train and supervise local hospital records officers. Mr Ernest W. Seccombe, of the United Kingdom, was recently appointed WHO adviser to this project.

Mr Seccombe, who studied at the City of London Technical College and the Institute of Hospital Administrators, London, is a member of the Advisory Panel on Medical Records of the King Edward's Hospital Fund for London.

Biochemistry of insecticide resistance

Much research is still required into the biochemistry of resistance by malaria vectors to certain insecticides. A WHO consultant, Dr A. S. Perry, from the Communicable Diseases Centre, Atlanta, Ga., USA, is spending two months in Greece, Turkey and Italy to investigate the presence of an enzyme known as DDT dehydrochlorinaze in resistant strains of *Anopheles*. Research on this problem had previously been confined to the laboratory.

One unusual item in Dr Perry's equipment is a portable ultra-violet spectrophotometer run from a

motor-car battery. This is being tried out for the first time, and reports so far received from Dr Perry indicate that the results are extremely successful.

Appointments in the Eastern Mediterranean Region

Dr A. A. S. El Halawani has been appointed WHO Deputy Regional Director for the Eastern Mediterranean. Of United Arab Republic nationality, Dr El Halawani was educated at the Universities of Würzburg, Germany, and of London and Liverpool, England. Before joining WHO, he was Assistant Under-Secretary of State of the Ministry of Public Health in Cairo, Egypt.

Mr W. A. Darity, of the United States, has been appointed health education adviser to the WHO Regional Office for the Eastern Mediterranean. Educated at the University of North Carolina, Mr Darity has been WHO Visiting Lecturer in Health Education at the School of Public Health, American University of Beirut, Lebanon, for the past two years.

Dr M. Farooq, of India, has joined the staff of the WHO Regional Office for the Eastern Mediterranean as public health adviser on bilharziasis. Dr Farooq attended the Universities of Allahabad and Bombay in India, and studied in England at the London School of Hygiene and Tropical Medicine and the Liverpool School of Tropical Medicine. He has also studied in the United States where he took a course in epidemiology at the Harvard School of Public Health under a fellowship from the Rockefeller Foundation. Before joining WHO, Dr Farooq was Deputy Inspector-General of Medical and Health Services, Hyderabad State, India.

Dr H. B. L. Russell, of New Zealand, has been appointed public health adviser at the WHO Regional Office for the Eastern Mediterranean. A former Senior Medical Officer of the Ministry of Health, Accra, Ghana, Dr Russell has more recently been adviser to a WHO-assisted public health project in Ethiopia.

Dr A. A. Sidky, of the United Arab Republic, has been appointed WHO epidemiologist with the task of surveying smallpox control services in the countries of the Eastern Mediterranean Region. Educated at the University of Cambridge and the London School of Hygiene and Tropical Medicine, England, and at the University of Cairo, Egypt, Dr Sidky was Director-General of the Cairo Municipal Health Department before joining WHO.

Mr E. Soop, of Sweden, has been appointed vital and health statistics adviser at the WHO Regional Office for the Eastern Mediterranean. Educated at the High School of Economics, Stockholm, Mr Soop was formerly Chief of the Statistical Section of the Royal Medical Board in Stockholm.

Review of WHO Publications

Principles of Administration Applied to Nursing Service, by H. A. Goddard, Geneva, 1958 (*World Health Organization: Monograph Series*, No. 41), 108 pages. Price: £1, $4.00 or Sw. fr. 12.—. French and Spanish editions in preparation.

The lack of qualified nurses in almost every country makes it imperative to utilize the services of those who are available to the best possible advantage. In recent years it has begun to be recognized that one of the keys to the efficient and economical use of nursing personnel is good administration. Since administration is a comparatively new concern of nurses, they feel a definite need for instruction and guidance in the principles and techniques involved and for training to develop the requisite skills. To help meet this need, the World Health Organization has published a practical guide to administration in nursing service, written by a consultant in hospital management in co-operation with nursing leaders from many countries.

First, consideration is given to the principles of administration; then the application of these principles to nursing service is described and illustrated. The emphasis is on proper planning, which is the foundation of good administration. The administration of both hospital and public health nursing services is discussed in detail. A questionnaire to aid in evaluating existing administra-

tive practices is provided as a guide for nursing administrators who cannot start afresh in their planning. Following this comes a major section on the techniques of administration, particularly as they apply to personnel management. Here such matters as job analysis, job specifications, personnel assessment, remuneration, health and welfare programmes for employees, and in-service training are dealt with. The approach is a practical one, and specific examples of both simple and complex problems and procedures are used as illustrations. A brief concluding section summarizes the basic tenets o. administration.

Seven annexes, some of which contain specimen forms for job analyses, job specifications, and personnel assessment, and a select bibliography intended to encourage further study of the subject complete the monograph.

This publication, which is, in effect, a manual of nursing service administration, should prove useful to all those concerned with the management or instruction of nursing personnel.

Sanitary engineers

. . ." Professor Petrik made an extensive survey of European schools and programs and collected a large volume of material by means of personal visits, correspondence, and study of the available programs. His study * covers 16 European countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Switzerland, Turkey, United Kingdom, and Yugoslavia.

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" Professor Petrik has assembled in this monograph information not previously available in one publication. The monograph will be an invaluable reference to everyone interested in sanitary engineering education. It should be on the bookshelf of all agencies which are concerned with providing training grants for graduate work for sanitary engineers. It is well written and can be recommended without reservations."

Herbert M. Bosch in *American Journal of Public Health*, 1957, **47**, 377-378

* *The training of sanitary engineers ; schools and programmes in Europe and in the United States*, by Milivoj Petrik. (*World Health Organization : Monograph Series*, No. 32). Price: £1, $4.00, or Sw. fr. 12.— (clothbound).

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